

CLAIMS:

1. A surface treating method of a titanium part, comprising the steps of:
determining an effective thickness of a hard oxide film to be formed on a surface
5 of the titanium part;
determining an effective surface roughness of the hard oxide film; and
oxidation treating the surface of the titanium part under a desired treating
temperature and a desired treating time such that both of the determined effective thickness
and effective surface roughness are satisfied.
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2. A method as defined in claim 1, wherein the effective thickness of the film
corresponds to a required hardness and is determined from a correlation of the hardness
against the film thickness of the hard oxide film.
- 15 3. A method as defined in claim 2, wherein the effective surface roughness of the
film corresponds to the required hardness and is determined from a correlation of the
hardness against the surface roughness of the hard oxide film.
4. A method as defined in claim 1, wherein the effective thickness and the effective
20 surface roughness of the film are 14 micrometers or less and 3.0 Rz or less, respectively.
5. A method as defined in claim 1, wherein the desired treating temperature is 730
degrees C or less.
- 25 6. A method as defined in claim 1 further comprising the step of treating the surface
of the titanium part after oxidation treating step.
7. An engine valve treated by the surface treating method as defined in claim 1.
- 30 8. An engine valve as defined in claim 7, wherein the engine valve having a hard
oxide film that has a thickness of 14 micrometers or less and surface roughness of 3.0 Rz or
less.